

Abstract Submitted
for the SHOCK19 Meeting of
The American Physical Society

Shock response of nanodiamonds explored by dynamic x-ray diffraction shock compression.¹ TIMOTHY JENKINS, GERRIT SUTHERLAND, NICHOLAS LORENZO, ERIC JOHNSON, US Army Rsch Lab - Aberdeen — Nanoparticles represent a unique class of material for the purposes of investigating both material properties and also computational simulations due to their size. The 4-5 nm sized structures have been shown to have a disordered diamond shell confining a compressed diamond core from past diffraction experiments by other groups. The strain between the core and the shell is a potential source for energy release and the response of this material is important to the understanding of failure of these systems. Shock experiments at the Dynamic Compression Sector of the Advance Photon Source provide a unique avenue to look at the structural response of these nanoparticles. We have done a series of dynamic x-ray diffraction shock experiments looking at the response of the core shell material and will present the results of our findings which speak to the changes in material response to compression and strain.

¹Work was performed at the Dynamic Compression Sector under DOE/NNSA award no. DE-NA0002442 and the Advanced Photon Source, DOE contract no. DE-AC02-06CH11357.

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Date submitted: 27 Feb 2019

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